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# Quantitative and qualitative benchmarks in volleyball game at girls "cadets" level (15-16 years old)

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## Abstract

The aim of our research was obtaining some indicators regarding the number and the efficiency of the offensive volleyball skills during the official competition. This kind of data can and will be used by coaches as training indicators.

The research was made during Romanian National Cadets Championship "Cadets" Level (organized at national level for 15-16 years old female players) during October 2011 and April 2012. The games were video recorded and analyzed afterward. Game skills were evaluated according to the immediate impact they had on the score (point lost or point earned) or the degree of freedom and advantage they offered to the player that would further act during that game phase. The data has been synthesized focusing on offensive actions – serve, set-pass, attack.

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## 1. Aim

Obtaining the sport competition benchmarks is, and will always be, a constant pursuit of top performance coaches. We have followed to objectify the quantitative aspects of the attack actions in the game of volleyball – serve, attack, set. Game skills quantitative and qualitative evaluation during official competition of the team may become a reliable frame of the training. We consider that these indicators from during the game can be used by the coaches in programming the training – from the volume and quality of execution point of view. Research regarding these aspects was focused mainly on the level of high performance (Patsiaouras et al, 2009; Bergeles et al, 2009; Rui et al, 2008), correlated with physical and coordination indicators (Temprado and Laurent, 1997). In our research we pursued making the offensive actions in volleyball – serve, attack, set-pass – objective

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from a quantitative point of view. We did this starting from the assumption that knowing these in-game obtained indicators can be used by the coaches in further training scheduling – regarding volume and quality of execution.

## 2. Material and Methods

The research took place during the Romanian National Female "Cadet" Championship (15 – 16 years old) 2011-2012 Edition. The 28 official matches have been recorded on camera, in order to be processed later. The data was synthesized for offensive skills – serve, set, attack. The actions were rated on scale of 5 degrees, using an evaluation according to the immediate effect on the score or the degree of freedom and advantage given to the player who further continues the game phase. Thus, in the following order: degree, evaluation and assignment criteria, we have:

- Ace - 4 – point immediately won: the ball touches the ground or cannot be held in the game by the opponent – game phase ends.
- Excellent – 3 – total control gained, maintained: opponent cannot build the attack or team-mate has every chance to finalize (in case of a set).
- Good – 2 – limited control gained, maintained: opponent has limited possibilities of continuing the game phase, team-mate can continue the game phase, but has limited options.
- Insufficient – 1 – control lost, no control at all: the ball is still in the game but the game phase cannot be finalized with an attack.
- Mistake – 0 – point lost – game phase ends.

## 3. Results

### 3.1. Serve

During the 28 matches, a total number of 3204 serves were recorded - 23% of which were Aces, 33% were Excellent, 21% were Good, 18% were Insufficient and 5% were Mistakes. During the worst match recorded, the percentage of "Insufficient" services was 24% and during the best match we recorded more than half (52%) "Excellent" attacks.

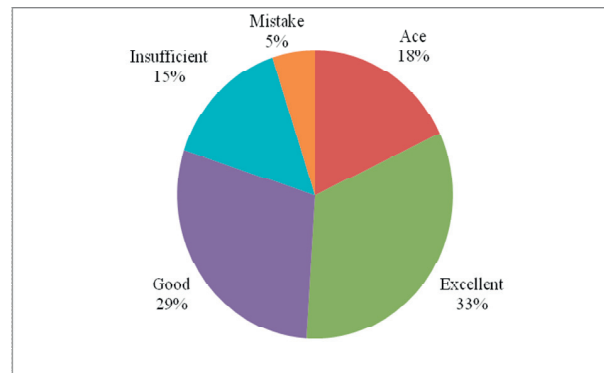


Fig. 1. Representation of the Serve average in the whole championship

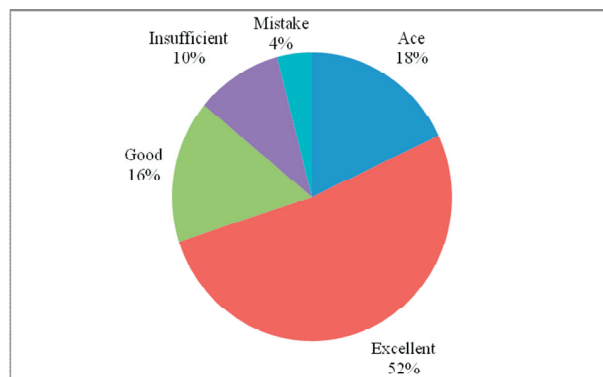


Fig. 2. Representation of the Serve percentage in a won match - 3-0

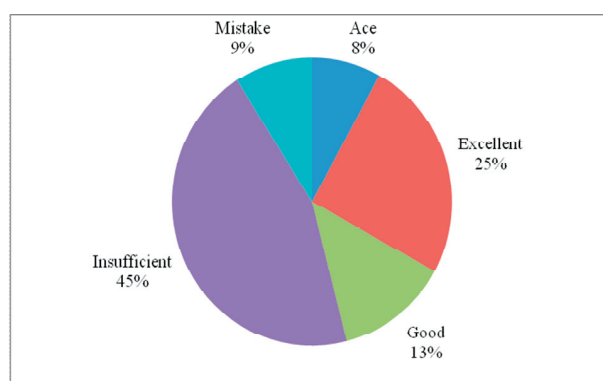


Fig. 3. Representation of the Serve percentage in a lost match - 3-0

### 3.2. Attack

A total of 4688 attacks were recorded, of which 35% were Aces, 17% were Excellent, 19% were Good, 17% were Insufficient and 12% were Mistakes. We must mention that each passing of the ball over the net during game phases, no matter how it was done, was considered an attack.

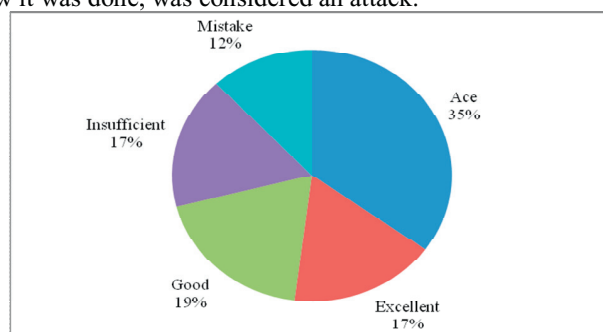


Fig. 4. Representation of the Attack average in the whole championship

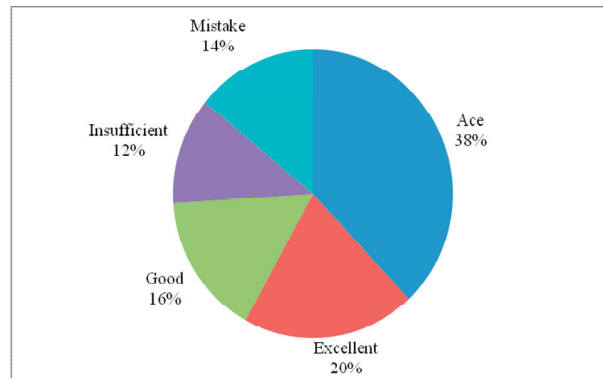


Fig. 5. Representation of the Attack percentage in a won match - 3-0

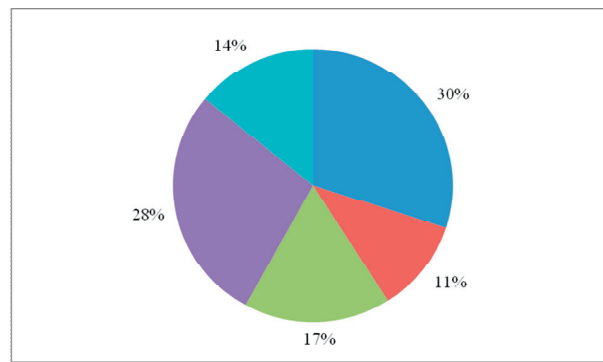


Fig. 6. Representation of the Attack percentage in a lost match - 0-3

### 3.3. Set

During the 28 matches, a total of 4498 sets were recorded, of which 41% were Excellent, 28% were Good, 29% were Insufficient and 2% were Mistakes. No matter who acted on it, all second touches of the volleyball were considered a set-pass.

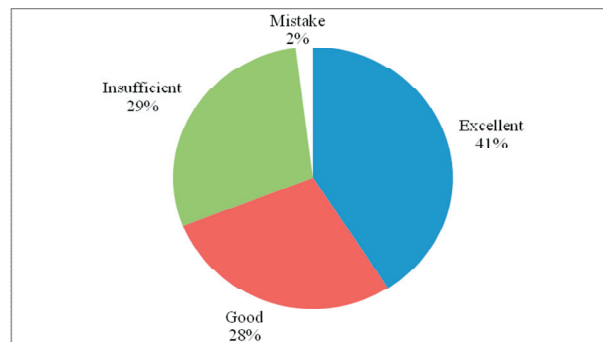


Fig. 7. Representation of the Set-pass average in the whole championship

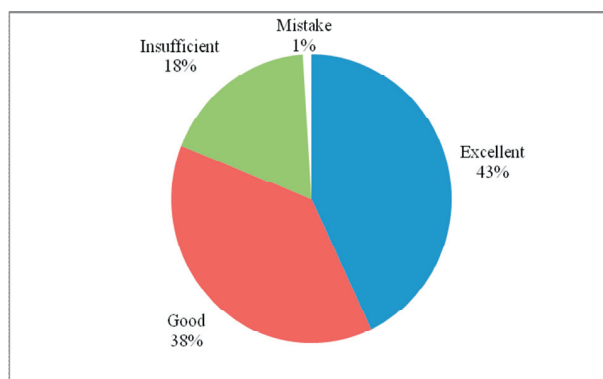


Fig. 8. Representation of the Set-pass percentage in a won match - 3-0

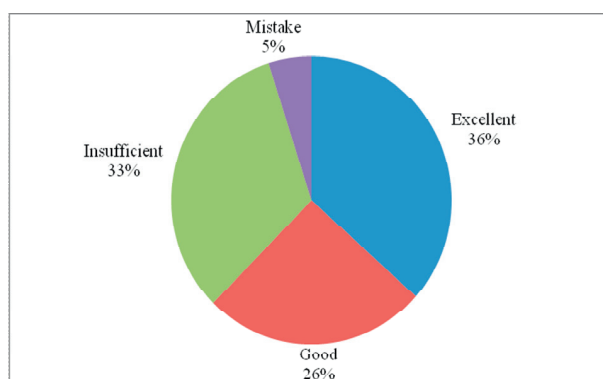


Fig. 9. Representation of the Set-pass percentage in a lost match - 0-3

#### 4. Discussion

From a qualitative point of view, we note that at the female cadet level, the excellent serves have the highest percentage. This means that the adversary can build an attack, but is more or less predictable from a completion point of view, the setter having limited options regarding the following pass. In a match lost with a score of 0-3, there are many insufficient serves which are not problematic for the opponent. On the other hand, in a won match – most serves are Excellent and the percentage of Aces does not rise spectacularly. Excellent serves are the ones that do not give the opponent the possibility to construct an efficient game phase and we consider that this makes a decisive difference.

Regarding the attack, we underline the difference in percentage of Insufficient attacks in match that ended with a categorical win (12%), and one lost 0-3 (28%). There are also, of course, differences in the other categories – but again, we believe that this skill category must be in the trainers' attention. For serves as well as for attacks, the main concern must be the focusing of attention on the completion of the game phase. This must be focused especially at this age, as the development of future volleyball players is emphasized in this period.

Regarding the set, we underline the fact that we found differences between Excellent (37%-43%) and Good (24%-38%) executions, and again, the most notable difference in percentage of Insufficient marks: 33% in a won game and 18% in a lost game.

As a conclusion we underline that analysing the scale's extremes – won categorically 3-0 and lost 0-3, the main difference for the offensive skills (serve, attack and set) is at the Insufficient actions.

Game skills quantitative and qualitative evaluation during official competition of the team will become a reliable frame for the scheduling and planning of the future training sessions.

From a different point of view and agreeing with Gabbett et al (2007) the evaluation of game skills efficiency may be used for selecting and promoting talented players. At this age group, in Romania, volleyball teams lose the most players because of the physiological transformation and social transformation imposed by school activity. We consider that careful evaluation of game skills, especially for setters (Laios and Moustakidis, 2011), is something that makes coaches more attentive regarding pursuing and keeping the best future athletes in sporting activities.

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